



AlSi10Mg

With an appropriate approval* AlSi10Mg can be used for manufacturing functional components or medical instruments.

Data in this document represents material built with 40 µm layer thickness and in a Nitrogen atmosphere on an M2 / M2 Multilaser machine. Values listed are typical.

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Al

POWDER CHEMISTRY

Element	Indicative value (wt%)
Al	Balance
Cu	0.00-0.05
Fe	0.00-0.55
Mg	0.20-0.45
Mn	0.00-0.45
Ni	0.00-0.05
Si	9.0-11.0
Zn	0.00-0.10
Ti	0.00-0.15
Pb	0.00-0.05
Sn	0.00-0.05
Other (each)	0.00-0.05
Other (total)	0.00-0.15

AlSi10Mg chemical composition et al. according to **ASTM F3318**.

MACHINE CONFIGURATION

- M2 / M2 Multilaser
- Argon Gas
- Steel blade/Rubber blade
- Layer thickness 40µm

- Build rate w/ coating* [cm³/h] : 19.8
- Max. Build rate per Laser** [cm³/h]: 29.4

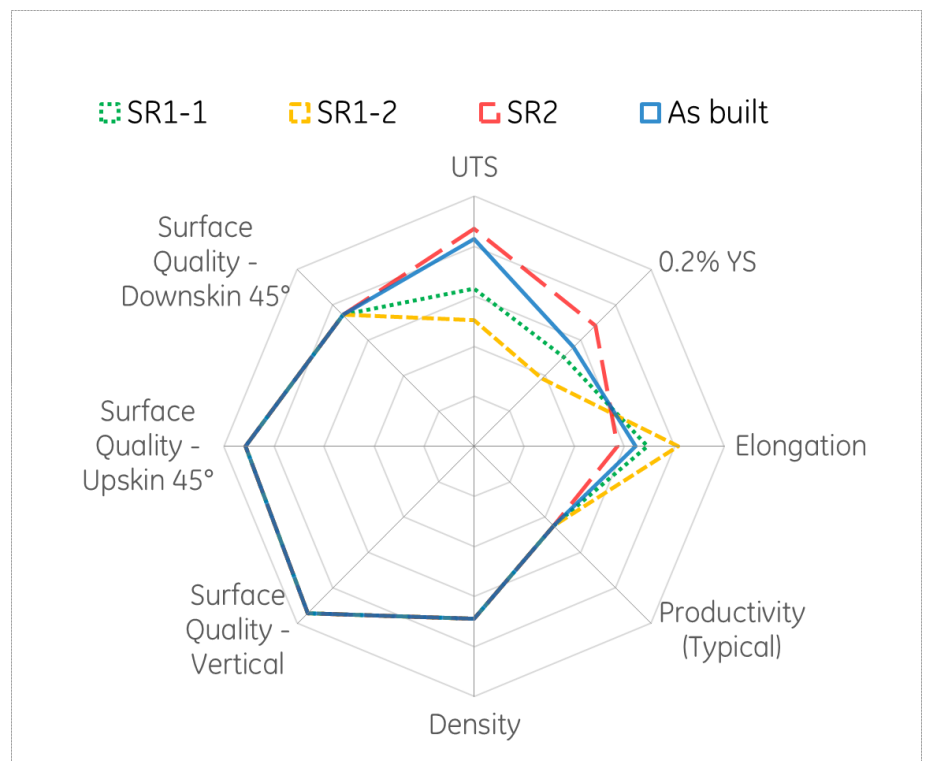
*Measured

**Calculated

THERMAL STATES

1. AS BUILT
2. STRESS RELIEF SR1-1: 270°C, 2 hours
3. STRESS RELIEF SR1-2: 300°C, 2 hours
4. STRESS RELIEF SR2: 180°C, 2 hours

SPIDER PLOT



PHYSICAL DATA AT ROOM TEMPERATURE

Upskin Downskin	Surface Roughness - Overhang (µm)			H V	Surface Roughness (µm)	
	45°	60°	75°			
	8	7	6		19	
14	9	7	7			

Thermal State	Porosity (% Density)		Hardness (HV5)		Poisson's Ratio	
	H	V	H	V	H	V
	As-Built	99.69	99.69	125	--	--
	SR1-1	--	--	107	--	--
	SR1-2	--	--	88	--	--
	SR2	--	--	138	--	--

TENSILE DATA

Tensile testing done in accordance with ASTM E8 and ASTM E21

Temperature: RT

Thermal State

	Modulus of Elasticity (GPa)		0.2% YS (MPa)		UTS (MPa)		Elongation (%)		Reduction of Area (%)	
	H	V	H	V	H	V	H	V	H	V
As-Built	72	72	260	245	445	465	10.5	7.4	--	--
SR1-1	73	73	230	225	340	355	12.9	8.2	--	--
SR1-2	71	75	175	170	275	280	17.6	14.5	--	--
SR2	77	71	320	295	465	490	7.9	6.1	--	--

H: HORIZONTAL (XY) orientation
V: VERTICAL (Z) orientation

* All of the figures contained herein are approximate only. The figures provided are dependent on a number of factors, including but not limited to, process and machine parameters, and the approval is brand specific and/or application specific. The information provided on this material data sheet is illustrative only and cannot be relied on as binding.